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RESEARCH PAPER

Community attitudes towards private native forestry in New South Wales

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Abstract An on-line survey during August–September 2006 examined community attitudes toward private native forestry. Views expressed by the 156 respondents confirmed prior hypotheses that attitudes would correlate with associations (e.g. professionals in favour of incentives, farmers in favour of freedom to manage, conservationists in favour of regulations), and with interest (biodiversity enthusiasts in favour of regulations, producers in favour of incentives), but refuted the prior hypotheses that urban dwellers would be more likely to favour regulations. Respondents appear to reflect different constituencies with divergent views without a shared understanding of the condition and dynamics of private native forests in NSW. This indicates the need for more extension and public education, particularly since forests continue to be an election issue. The survey did not gauge support for private native forestry, but helps to untangle the views from the constituencies promoting them. Regulatory approaches received most support from respondents affiliated with an environmental group, with a national concern for biodiversity, who fear that private native forests are in poor condition and will degrade further. Advocates for more landholder freedom tend to be landholders who believe that private native forests are in better condition than comparable State Forests, and who are optimistic about the future for private native forests. Advocates for incentives tend to be urban dwellers with a production focus and professional affiliation.

Keywords Private native forests · Payments for environmental services · Incentives

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Introduction

The Government of New South Wales (NSW, Australia) has spent a decade attempting to implement regulations dealing with private native vegetation (Prest 2003; Nichols 2007). Some interest groups have lobbied for the rapid introduction of strict regulations (e.g. Morrison 2006), assuming that the dominant interest of private native forest owners is to realize a profit as quickly as possible. Others have called for a more considered introduction of a stewardship scheme based primarily on incentives (e.g. Vanclay et al. 2006). This paper examines the evidence regarding landholder and community attitudes towards private native forestry.

Most of the surveys regarding private native forestry in Australia (e.g. Deane 2004) have focussed on landholders, and there is little information about the attitudes of the broader community towards private native forestry. A survey of 'Who cares about the Environment' conducted by the NSW Environment Protection Agency (2003) reflects broad community support for farmers and seems inconsistent with recent calls (such as those by Morrison 2006) for tough legislation to regulate private forestry. The present study was devised to examine these conflicting attitudes to private native forests, and was conducted during the display period for the Draft Code of Practice for Private Native Forests (NSW DNR 2006).

The internet survey reported in this paper sought to test the hypotheses that attitudes towards private native forestry would correlate closely with associations (e.g. professional, farming, conservation) by respondents, with their proximity to the forest (both residential and work situation), and with the inclination of the respondent towards conservation or production values. This paper examines results of previous surveys of community attitudes towards private native forests in Australia, describes the design and results of the present survey, and reports a selection of representative observations reported by survey participants.

Previous Surveys Related to Private Native Forestry in Australia

There is relatively little literature relating attitudes towards private native forestry in NSW. In a literature search, Deane (2004) found only five such reports relating to private native forestry in Australia (amongst 60 world-wide). Much related material deals with landholder attitudes to planted forests, not to the current topic of community attitudes toward private native forests. However, existing studies offer an insight into both the extent of information and attitudes towards these forests.

It was reported by Resources Assessment Commission (1992, p. 495–6) that

> Very little is known about the extent and condition of private native forest and the management practices that are followed. There is a poor understanding of the economic and other forces that may be affecting decisions of private land owners in matters such as the frequency of logging, conservation management and whether to regenerate cleared areas...

In 1997, the NSW State of the Environment Report (NSW EPA 1997) stated that 'private forests are not generally managed for long term sustainability' of timber production. The foundation for this remark is not apparent.

In 1998, a survey of farm forestry in south-east Queensland (Queensland CRA/RFA Steering Committee 1998, p. 22) found that 52% of 60 respondents with private native forest stated the intention 'to manage at least part of their forest for ongoing wood production'. Most of those consulted felt that there was potential 'to successfully manage their native forests for sustained timber production' (Queensland CRA/RFA Steering Committee 1998, p. 22). In a related survey, sawmillers indicated their view that 62% of landholders were managing their native forests for continued timber production, while 30% were clearing to improve grazing (Queensland CRA/RFA Steering Committee 1998). That study reported that one of the main impediments to sustainable private native forestry was a lack of silvicultural, market and economic information to enable informed decision-making by landholders.

A similar study in NSW (NSW CRA 1999) found that of 254 responses, 93% in the Upper North East and 75% in the Lower North East had private native forests. Over 35% indicated that they currently manage their forests for both timber production and conservation and will continue to do so, while 15% managed for conservation only, and 5% managed for timber production alone. In relation to the main factors affecting forest management, 69% of respondents identified concern or confusion over regulatory and legislative requirements, 40% referred to problems in negotiating environmental controls, 43% expressed concern about low financial returns, and 49% sought professional management advice. About 30% were interested in having fauna and flora surveys undertaken. Although more than half the respondents had been involved in some form of forest management, they rated their forestry activities low relative to grazing and dairying, the two most common forms of land use. Most respondents reported that their forestry income amounted to less than 10% of total farm income.

A more recent study in southern NSW (Deane et al. 2003) revealed that the average length of private native forest ownership was 26 years. Amongst responding landholders, the prime reasons for an interest in native forestry, attracting 87–89% of affirmations, were (1) seeking solitude and/or privacy, (2) observing animals and/or plants, and (3) hiking or nature walking. Many also take visitors into forest (65%), and go camping or picnicking (55%). About 57% of respondents had harvested timber for on-property use, 50% had taken measures to reduce fire risk, and 39% had undertaken conservation activities. Deane et al. (2003, p. x) reported that 'private forest landowners have a strong sense of stewardship over their forest'. About 53% of private native forest owners felt that they should be able to do as they please with their forests, while (in another question) 78% agreed that government should have a strong role in overseeing landowner use of their forest. Deane et al. (2003, p. x) noted this apparent contradiction, and observed that ''these results may indicate landowners believe they are able to take care of their own forests but that others need more oversight, although it is not possible to explain these results without further study''. A majority of landowners agreed with the statement that, 'if

Table 1 Views expressed by NSW citizens regarding the concern shown by stakeholder groups for the environment

Stakeholder group	Doing enough (%)	Need to do more (%)
Farmers	43	53
Local councils	32	66
Retailers	23	71
State Government	22	76
Commonwealth Government	20	77
Manufacturing industry	16	80
Individuals	14	85

Source: NSW EPA 2003 (Fig. 14, p. 41)

carefully managed, privately owned native forest can provide products from the forest and conservation outcomes'.

Every three years since 1994, the NSW EPA has conducted a survey of people's attitudes to the environment. In 2003, the principal concern was for water, with 57% of the 1,421 respondents identifying water as one of the top two environmental concerns facing NSW (NSW EPA 2003, Table 7). In contrast, only 10% of respondents included land degradation, and only 4% mentioned logging or woodchipping. In 2003, the environment was mentioned amongst the top two concerns less frequently than in previous years (down by half since 1997), whereas the concern for human health and education had doubled during the preceeding six years. Despite this decline in environmental concern, 59% of respondents expressed support for increased taxes to fund measures to fix environmental problems. When asked whether various sectors were doing enough to protect the environment in 2003, respondents expressed the view that farmers were doing more for the environment than any other sector (Table 1).

Research Method

The internet survey was initiated in late July 2006 and ran for two months. It was conducted via a commercial on-line system (AdvancedSurvey.com, survey 42053) that offered a number of quality assurance features, including the ability to prevent multiple responses from a single computer, and to require a response to a question. The survey was promoted on several email discussion lists and bulletin boards (including Environment List, Enviroweeds, Forest Links, Institute of Foresters, Oz-Envirolink, NRM Discussion List, NSW Farmers Federation, Southern Cross University Forum, Subtropical Farm Forestry Association, Timber Communities Australia), and care was taken to promote it equally through professional, farming, environmental and academic circles.

The survey was devised to test the hypotheses that attitudes would correlate closely with respondents' associations (e.g. professional, farming, conservation),

with proximity to the forest (for both residential and work locations), and with the inclination of respondent towards conservation versus production values. The questionnaire is provided as Appendix A.

Results and Discussion

A total of 156 respondents completed the questionnaire. Respondents represented a diverse constituency, with a median age of about 50 years, primarily rural workers (46% outdoor, 29% office) from rural areas (46% rural, 43% rural cities and towns, 10% Sydney), who visited forests regularly (53% visited weekly). Of those who revealed their postcode, 26% reported postcodes in the NSW North Coast region. Many respondents indicated an affiliation with a professional (73%), farming (24%), or conservation (22%) association. Only 5% reported membership of a political party.

For many questions, the median and modal responses were the same. The typical respondent felt that private native forests (PNFs) were in about the same condition as those in State Forests, that PNFs would deteriorate under the current regulatory environment, and that the best way to improve the prognosis for PNFs was to offer financial incentives. The majority of respondents expressed a state-wide or national rather than a local concern for PNFs. Approximately equal proportions expressed production (50%) and conservation concerns (biodiversity and other environmental services, 48%). They also expressed diverse views about the greatest threats to PNFs: common concerns were clearing (36%), neglect (35%; includes weeds, feral animals, rubbish), inappropriate fire regimes (14%), logging (12%) and grazing (2%).

The nature of the sample makes interpretation of univariate summaries difficult, and it is more informative to examine multi-variate patterns. For instance, the views expressed about effective strategies for managing private native forestry were strongly aligned with their affiliations: those with farming associations wanted freedom to manage as they saw fit, those with professional associations favoured financial incentives, and those with a conservation association but without a farming or professional association favoured stronger regulation (Table 2).

Respondent's interests regarding production versus biodiversity also influenced many views. The majority (64%) of those who reported an interest in production values felt that the condition of PNFs were generally comparable or better than in State Forests, whereas 52% of those with a biodiversity interest felt that PNFs were in a worse condition than State Forests. Urban respondents regarded PNFs as in worse condition than State Forests, whereas farm dwellers considered PNFs in better condition than State Forests (Table 3). Most (70%) of those who considered PNFs in poor condition think that these forests are going to deteriorate further. Conversely, 40% of those who are optimistic about the future of PNF think they are already in better condition than State Forests. Those who consider PNF in poor condition, regard clearing for agriculture (34%) and logging (29%) as the major threats. Conversely, those who regard PNF condition as comparable to, or better

Table 2 Respondent's affiliation and their views about regulation of private native forestry

Dominant view (>50% of respondents)	Stated affiliations	*n*	Proportion with dominant view (%)
Stronger regulation	Conservation only	17	57%
Financial incentives	Professional only	89	75%
	Professional and conservation	9	57%
	Professional, conservation and farming	5	60%
Freedom to manage	Farming only	18	57%
	Farming and professional	11	60%
	Farming and conservation	4	67%

Table 3 Views about the state of the forest align with location of residence

Location of residence	Respondent's view of PNF condition compared to State Forest					
	Poor	Slightly worse	Comparable	Slightly better	Good	Total
In Sydney	3	**5**	4	1	2	15
In a town	18	13	**19**	8	7	65
Rural residential	4	4	**5**	3	2	18
On a farm	10	3	10	**8**	16	47
Total	35	25	38	20	27	145

Numbers in bold are row medians

than, State Forest consider weeds and feral animals (38%) and fire (20%) as the major threats.

These views about the state of, and prognosis for, PNF also influence opinions about the best way to improve outcomes (as summarised in Table 4). Those who

Table 4 Number of responses classified by respondent's preferred form of regulation and their impression of the state of PNF

Respondent's preferred form of PNF regulation	How respondent views PNF condition relative to State Forests					
	Poor	Slightly worse	Comparable	Slightly better	Good	Total
Freedom to manage	1	1	4	4	**14**	24
Financial incentives	16	14	**19**	12	8	69
Stronger regulation	**12**	4	3	0	1	20
Total	29	19	26	16	23	113

Numbers in bold are row medians

regard PNF as being in good condition (compared to State Forests) favour greater freedom for landholders to manage their native forests as they see fit. Conversely, those who regard PNF in poor condition tend to favour stronger regulation.

Because of the limits to analyses that may be attempted with textural and categorical data, it is useful to convert the data into linear form to facilitate further analyses. There is an element of subjectivity in such conversions, but it is reasonable, for instance, to convert place of residence into a 5-point scale (Sydney −2, provincial city −1, country town 0, rural residential +1, on farm +2), and proposed solution into a 3-point scale (regulate = −1, freedom = 0, incentives = +1). Table 5 summarizes response frequencies under these codes, and reports selected correlations between two variables of interest ('solution' to PNF regulation and condition of PNF) and possible explanatory variables. Some of the resulting significant correlations ($P < 0.05$) have already been discussed (members of conservation organizations are more likely to favour regulations; respondents with a production focus are more likely to favour incentives; more regulation is favoured by those who fear that the condition of PNF will deteriorate). New insights also emerge. Table 5 suggests that Sydney dwellers are likely to favour incentives, and that rural dwellers are more likely to greater freedom to manage as they see fit. Table 6 summarizes the original untransformed data, confirming the correlation and revealing the tendency of farmers to suggest 'Other' more complex solutions usually involving a combination of freedom, regulation and incentives.

There is much autocorrelation between the variables in Table 5, so despite several significant univariate correlations, only two variables are significant in multivariate regressions. Multiple regression analysis indicated a relationship

Table 5 Correlations between respondent attributes and their perceptions of private native forest condition and effective regulatory approaches

Respondent attribute	Coding	Solution	Condition
Residence	Sydney = −2, Town = 0, Farm = 2	**−0.2028**	0.0609
Spatial scope	Local = 0, National = 3	**−0.1440**	−0.1262
Conservation assoc	No = 0, Member = 1	**−0.1371**	−0.0760
Main interest	Production = −1, Services = 0, Biodiversity = 1	−0.1294	**−0.2306**
Political party	No = 0, Member = 1	−0.1029	0.0566
Forest visits	Rarely = −1, Annual = 0, Monthly = 1, Weekly = 2	−0.0898	0.0190
Work	Office = −2, Home = 0, Farm = 2	−0.0829	0.1078
Farming assocn.	No = 0, Member = 1	−0.0502	0.1086
Age	21–35 = 1, 36–50 = 2, 51–65 = 3, 66+ = 4	0.0395	0.1257
Condition	Poor = −2, Good = 2	0.0951	1.0000
Professional assocn.	No = 0, Member = 1	0.1196	-0.0181
Prognosis	Deteriorate = −1, Improve = 1	**0.1485**	0.1117
Solution	Regulate = −1, Freedom = 0, Incentives = 1	1.0000	0.0120

Bold indicates significance at the 5% level. (*t*-test, Cohen 1977)

Table 6 Geographic influences on attitudes to PNF regulation

Respondent's preferred regulatory approach	Sydney	Regional city	Country town	Rural residential	On farm	Total
Regulate	2	2	7	5	6	22
Freedom	2	1	3	3	**16**	25
Incentives	**10**	**14**	**24**	**11**	16	75
Sub-total	14	17	34	19	38	122
Other	2	7	10	3	12	34

Bold numbers are column medians

between residence (Sydney, town, farm) and main interest (production, biodiversity) as predictors of the 'policy solution' (regulation, freedom, incentives).

Because regression estimates depend upon the subjective transformations, it is informative to offer a corresponding summary of the untransformed data. Table 7 illustrates that city dwellers are most likely to be supportive of incentives (mean score $\geq$0.6, indicating a high proportion in favour of incentives, i.e. coded as +1), and that biodiversity enthusiasts in rural residential areas are most likely to favour regulations (score = 0, indicating a high proportion favouring regulations, i.e. coded as -1). After these residence and interest variables have been considered, other variables (including membership of conservation or farming associations, local or national concern for forests, and prognosis for forests) offer no further explanatory ability.

Many respondents offered long and detailed commentaries. Typical comments include (in time sequence of receipt of responses):

- '... best form of protection is active management and site-specific management plans'
- 'Focus on outcomes, not regulations'
- Much rural land has 'changed ownership into seachange owners with diverse landuse goals'
- '... lock up and leave creates a fire hazard'

Table 7 Tendency to favour incentives for PNF, tabulated by geography and responder's interest

Location of residence	Biodiversity	Services	Production	Average
Provincial city	0.7	–	0.8	0.7
Sydney	0.6	–	0.6	0.6
Country town	0.3	1.0	0.5	0.5
Rural residential	0.0	0.5	0.7	0.4
Farm	0.2	0.0	0.4	0.3
Average	0.3	0.5	0.5	0.4

-1 indicates regulations, 0 indicates freedom, +1 indicates incentives. Dashes indicate that no responses were recorded in that category

- '... regulation forces PNF owners to neglect their forested land because it has no economic value'
- Regulatory procedures should 'include the ability to use accredited experts with forestry skills'
- '... any code should not preclude appropriate silvicultural treatments'
- '... ruthless logging by landholders ... needs regulation and strong standards set by forest scientists'
- 'main problem: limited regulation = farmers manage PNF as they think best; heavy regulation = no-one will manage it'
- '... bureaucratic intervention should be used very carefully—there is nothing like self-interest to ensure alternatives such as grazing do not degrade forest values'
- 'Prohibit patch-clearfelling, which is just land-clearing by stealth, and ensure that areas approved for PNF become ineligible for any future land-clearing approvals'
- '... opportunity to improve the current condition of native forests for both timber and biodiversity objectives'
- 'major threat to private forests is mis-mangement caused by regulation creating inappropriate objectives'
- 'DNR personnel ... need to be better resourced'
- 'The government has sent a clear message to land owners not to have any flora or fauna that is on the threatened species list on your land'
- '... effort would be best focussed on trying to educate forest owners about how they can manage their forests sustainably ... CMAs should take up the education challenge ... Legislation is necessary, however education is the key'
- 'I need money ... I ring up a local contractor and he asks what I have. I say I don't really know ... but could you please come and have a look ... Imagine if we sold cattle like this!'
- 'Farmers care!'
- '... PNF in my area have been managed sustainably ... My major concern is [big] companies ...'
- '... As Thoreau said: Government governs best which governs least'.

There is no common thread in these commentaries, but they further illustrate the diversity of respondents and views in the debate over private native forests.

Conclusions and Suggestions for Further Research

Survey findings refuted the prior hypotheses that urban dwellers favour regulations and that rural dwellers would favour incentives. This finding of urban support for incentives appears novel and warrants confirmation through further study.

The results of this small survey suggest that attitudes of respondents reflect diverse constituencies with divergent views and without a shared understanding of the condition and dynamics of native forests. This is an important finding, and should be confirmed with a larger survey. Despite the weak evidence for this

observation, the suggestion of a lack of a shared understanding indicates the need for more extension and public education, particularly because forests have often been, and continue to be, an election issue that often fosters politically-motivated but far-reaching policies.

It is inappropriate to conclude from this survey that there is wide support for financial incentives to improve management of private native forestry. The survey has shown that such views exist in the broader community, but the survey was not designed to quantify the proportion of the population holding these views. Instead, the survey sought to untangle diverse views from the constituencies promoting them. Regulatory approaches received most support from respondents affiliated with environmental groups, with a national concern for biodiversity; respondents who fear that private native forests are in poor condition and will deteriorate further. Advocates for more landholder freedom tend to be landholders who believe that private native forests are in better condition than comparable State Forests, and who are optimistic about the future of private native forestry. Advocates of financial incentives tend to be urban dwellers with a production focus and professional affiliations. These findings should be considered preliminary, and warrant further examination.

Appendix A: Questionnaire for the Web-based Survey

(1) In your view, what is the typical condition of private native forest in NSW, with respect to comparable public forest in the vicinity?

Good
Slightly better
Comparable
Slightly worse
Poor
Don't know

(2) Given the current regulations and markets, what is your prognosis for private native forests? Will they...

Be cleared and converted to other uses
Deteriorate
Remain the same
Improve
Don't know

(3) Does your concern for private forests relate primarily to forests...

Nationally
State-wide
Within your region
Within your immediate neighbourhood

(4) What is your major concern regarding these forests?

Biodiversity (protection of fauna and flora)
Scenery and recreation opportunities
Other environmental services (water, salinity, etc)
Production (of timber, honey, etc)

(5) What do you think is the major threat to these forests?

Clearing for urban development
Clearing for agriculture
Fire (burning-off or wildfire)
Grazing
Logging
Weeds and feral animals
Other neglect (dumping of rubbish, drift of farm chemicals, etc)

(6) What do you think is the best way to get better outcomes for private native forests in NSW?

Stronger legislation and more rigorous enforcement
Giving landholders more freedom to do as they see fit
Offering financial incentives for specified outcomes
Other (please specify)

(7) Please tell us a little about yourself: Your age?

Under 21
21–35
36–50
51–65
Over 65

(8) Where do you live?

In Sydney
In a regional city
In a country town
Rural residential
On a farm

(9) Where do you work?

Office
Factory
At home (or don't work)
On the land (farm or forest)
Service industry (indoor)
Service industry (outdoor)
Other indoor
Other outdoor

(10) How often do you visit a forest (private or public, for work or pleasure, to walk or picnic)?

Couple times a week
Couple of times a month
Couple times a year
Rarely

(11) Do you belong to any of the following groups?

Conservation organization
Farmers federation
Political party
Professional association

(12) Any other observations or concerns about private native forests?

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